

**IN THE UNITED STATES BANKRUPTCY COURT  
FOR THE DISTRICT OF DELAWARE**

<b>In re:</b>	)	<b>Chapter 11</b>
	)	
<b>W.R. Grace &amp; Co., <u>et al.</u>,</b>	)	<b>Case No. 01-01139 (JKF)</b>
	)	<b>(Jointly Administered)</b>
	)	
<b>Debtors.</b>	)	

**Memorandum in Support of  
the ZAI Claimants' Motion for Summary Judgment**

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Dated: July 7, 2003

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## **STATEMENT OF THE NATURE AND STAGE OF THE PROCEEDING**

This motion is filed in accordance with the November 25, 2002 Order of the Honorable Judith K. Fitzgerald permitting the filing of "Daubert / Summary Judgment motions by July 7, 2003" in connection with the Science Trial scheduled for September 16 and 17, 2003.

## **SUMMARY OF ARGUMENT**

1. There is no issue of material fact, and the ZAI Claimants are entitled to judgment as a matter of law, that ZAI can contaminate homes and create an unreasonable danger when disturbed. The undisputed evidence from the ZAI Claimants' experts, government authorities, and even Grace's experts agrees that ZAI presents a hazard sufficient to require specially trained individuals to remove it with stringent precautions, at the latest, before disturbance during major remodeling or demolition.

2. There is no issue of material fact, and the ZAI Claimants are entitled to judgment as a matter of law, that because of ZAI's ability to contaminate homes and pose an unreasonable danger to individuals in the vicinity of its disturbance, ZAI Claimants have compensable claims under tort and other legal theories in this bankruptcy.

## **STATEMENT OF FACTS**

### **I. Introduction**

From the 1940s until 1984 millions of homeowners and their contractors unwittingly poured trillions of loose asbestos fibers into their attics. Except for the small percentage already inhaled or set loose in the atmosphere, these fibers remain in a million or more homes awaiting any disturbance to release them into the air. Air testing in homes confirms that ZAI disturbance produces enormous fiber release. Settled dust testing confirms that releases have already occurred, contaminating ZAI homes. Scientific data from numerous

sources—the EPA, Canadian government, ZAI Claimants’ testing and Grace itself—is remarkably consistent in recognizing ZAI’s lethal potential.

After a year of intensive investigation, including reviewing millions of pages of documents, interviewing countless witnesses, deposing Grace officials and experts, and commissioning scientific testing, ZAI Special Counsel present a case that compels an unmistakable conclusion – ZAI is a potentially lethal product whose fiber releases must be controlled and whose inevitable cost of removal must be incurred. Experts on both sides agree. It is not a question of “if” ZAI must eventually be removed with stringent (expensive) precautions, but only “when” that action must be taken.

ZAI has already killed and will likely kill again.<sup>1</sup> The goal for the future must be to minimize additional exposures, treat ZAI with the careful concern it warrants and remove it in a controlled, safe manner. The inherent defect in ZAI – asbestos contamination – makes it inevitable that homeowners will be restricted in using their homes while ZAI remains. This stark fact is confirmed by the extraordinary, recent EPA “Advisory to the Public” that answers the fundamental question homeowners are asking:

**What should I do if I have vermiculite attic insulation?**  
**DO NOT DISTURB IT.** Any disturbance has the potential to release asbestos fibers into the air. Limiting the number of trips you make to your attic and shortening the length of those trips can help limit your potential exposure. EPA and ATSDR strongly recommend that:

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<sup>1</sup> See Harashe v. Flintkote Co., 848 S.W.2d 506 (Mo. Ct. App. 1993) [affirming mesothelioma death verdict against W.R. Grace for man who was briefly exposed by pouring ZAI in his attic], [Attachment 1] While Grace will undoubtedly argue that Mr. Harashe had other asbestos exposure, Grace made the same argument to avoid liability in the Harashe trial. The jury rejected Grace’s excuse and the Appellate Court held the jury was justified in finding the ZAI exposure “was a substantial factor and a contributing cause for plaintiff’s terminal illness”. Id. at 510. Grace has admitted that it had already settled between twenty-five and one hundred additional ZAI bodily injury claims prior to bankruptcy. Debtors’ Objections and Resps. to ZAI Claimants’ Second Set of Reqs. to Admit to Debtors. [Attachment 47]



- You should not store boxes or other items in your attic if retrieving the material will disturb the insulation.
- Children should not be allowed to play in an attic with open areas of vermiculite insulation.<sup>2</sup>

These federal agencies also recognize that expensive asbestos removal is inevitable for homeowners with ZAI:

- If you plan to remodel or conduct renovations that would disturb the vermiculite, hire professionals trained and certified to handle asbestos to safely remove the material.
- You should never attempt to remove the insulation yourself. Hire professionals trained and certified to safely remove the material.<sup>3</sup>

Importantly, Grace's principal industrial hygiene expert agreed at his deposition that ZAI must be removed with stringent safety precautions by trained professionals prior to major remodeling or before demolition.<sup>4</sup> In fact, he had already given precisely this advice to a client with ZAI outside the litigation context.<sup>5</sup> His advice is consistent with the opinion of Grace's former manager of industrial hygiene:

This material should be removed from attics appropriately. This should be done by professionals that know what they are doing.<sup>6</sup>

No science trial is necessary to debate what has already been conceded by Grace's experts and universally recognized by everyone else. Disturbance of ZAI leads to an

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<sup>2</sup> EPA, "Current Best Practices For Vermiculite Attic Insulation – May 2003" (emphasis in original). [Attachment 2]

<sup>3</sup> Id.

<sup>4</sup> Deposition of Morton Corn, at 93-97, 113 (May 29, 2003). [Attachment 3—"Corn Deposition"]

<sup>5</sup> Id.

<sup>6</sup> Deposition of Thomas Hamilton, at 125 (Feb. 25, 2003). [Attachment 4—"Hamilton Deposition"]

unreasonable danger sufficient to warrant EPA and Grace's experts agreeing that only trained professionals using special equipment and precautions should handle it. Accordingly, with the dangerous nature of ZAI established, the ZAI Claimants move for summary judgment determining that ZAI has and will continue to cause property damage that supports a bankruptcy claim.

It is undeniable that this bankruptcy must make provision for assisting homeowners with the gargantuan task of inevitable ZAI removal. Otherwise, ZAI claims cannot be discharged. In this memorandum, the ZAI Claimants first review the confluence of scientific evidence from numerous sources, including Grace, confirming that ZAI has and always will present an asbestos contamination problem and potentially lethal exposure if uncontrolled. Next, the Claimants discuss why ZAI presents valid bankruptcy claims, whether based on: (a) air testing (as Grace prefers); (b) dust testing (as the Claimants and many courts employ); or (c) a combination of the two.<sup>7</sup>

Finally, the ZAI Claimants present a road map for treating ZAI claims in this bankruptcy. Fortunately, current evidence indicates that where ZAI is undisturbed and likely to remain so, immediate removal is not necessary. Thus, ZAI Special Counsel does not advocate a "rip it all out now" approach. Rather, a ZAI claims fund can address the problem and permit this bankruptcy to move toward resolution.

## **II. ZAI is a Reservoir for Asbestos Contamination**

### **A. Grace's Mid-70s Testing Confirmed ZAI's Fiber Release Potential**

While homeowners have understandably been surprised to learn that a product advertised as "absolutely harmless", "perfectly safe", and "contains no harmful substance",<sup>8</sup>

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<sup>7</sup> In a separate motion filed today, the ZAI Claimants discuss why state consumer protection statutes provide an independent basis for their bankruptcy claims.

<sup>8</sup> See ZAI advertisements. [Attachment 5]

actually contains enormous numbers of asbestos fibers, Grace is not. Indeed, Grace's historical ZAI testing alerted it long ago to ZAI's significant fiber release.

Although ZAI was being sold as early as the 1940s, Grace apparently never tested it for asbestos release until the mid-1970s.<sup>9</sup> At that time it conducted three types of tests: (1) "drop tests" in which bags of ZAI were poured through a hopper onto the floor; (2) simulated attic tests where workers poured bags of ZAI in an artificially constructed attic at a Grace plant; and (3) actual attic tests.<sup>10</sup> Internal reports on these tests, virtually none of which had ever been publicly disclosed, show that ZAI produced significant fiber release when disturbed by pouring it.<sup>11</sup> Some results even exceeded the OSHA "ceiling concentration" in the mid-1970s of 10 f/cc, which was the maximum fiber level that was never to be exceeded.<sup>12</sup>

Needless to say, these results alarmed Grace officials because they indicted the product Grace had been selling for years. Grace's general counsel recognized that ZAI was not even meeting the relatively lax occupational standards of the time. In suggesting that Grace could tell inquirers that expanded vermiculite products "in their reasonable end use will not expose users to tremolite asbestos fibers in excess of presently allowable OSHA

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<sup>9</sup> The earliest ZAI testing Grace produced in response to discovery requests is dated in the mid-1970s.

<sup>10</sup> Deposition of Fred Eaton, at 16, 25-26, 40-42 (Feb. 6, 2003). [Attachment 8—"Eaton Deposition"]

<sup>11</sup> A Grace official cynically noted Grace's approach to locating home attic test candidates: "Since friends and people of means are unreliable for actual home attic tests, the thrust now and in the future will be the poor and the needy." See Memo from F. Eaton to J.W. Wolter (Aug. 22, 1980). [Attachment 6] The ZAI Claimants have located some of these homeowners, who confirmed that Grace never told them of the hazard it was pouring into their attics. See Deposition of Harlow Casler, at 69-70 (Feb. 26, 2003). [Attachment 7]

<sup>12</sup> See OSHA Asbestos Standard, 29 C.F.R. §1910.1001 (1976). [Attachment 9]; Memo from R.H. Locke to H.A. Brown (Mar. 11, 1976) ["Attic fill, tested twice, in its current form creates fibre counts in excess of the 5 fibre level generally and in excess of the 10 fibre ceiling in some instances."]. [Attachment 10]

limits”, he cautioned: “This assumes that changes will be made in masonry fill and attic fill so as to make the suggested language correct as to these products.”<sup>13</sup>

The poor test results came at a particularly bad time because regulatory agencies, particularly the Consumer Product Safety Commission, were becoming interested in vermiculite products sold to consumers. Grace launched a crash program to try to bring the fiber counts down before it had to report formally to regulatory agencies. Grace attempted numerous methods including: (1) trying to remove as much asbestos as possible from the raw vermiculite ore to produce a “Super Clean” vermiculite;<sup>14</sup> (2) banning (at least temporarily) the use of a particularly dusty ore size for ZAI;<sup>15</sup> and (3) trying to find a spray to coat the vermiculite and prevent fiber release on installation.<sup>16</sup>

The results were discouraging. Grace testing found that some “Super Clean” vermiculite had more respirable fibers than regular vermiculite.<sup>17</sup> ZAI sprayed with a “binder” sometimes released more asbestos than unbound ZAI.<sup>18</sup> This prompted a Grace scientist to label the binder program “window dressing”.<sup>19</sup> Grace’s former manager of industrial hygiene summarized Grace’s failure to control ZAI fiber release:

Testing done by Fred Eaton in the simulated attic tests and in the actual home tests showed that in spite of the best efforts to clean the vermiculite, in spite of the best efforts to amend the vermiculite, that we never – at Grace we never were

<sup>13</sup> Memo from O.M. Favorito to E.S. Wood (Mar. 14, 1977) [emphasis added]. [Attachment 11]

<sup>14</sup> Eaton Deposition, at 39-40. [Attachment 8]

<sup>15</sup> Memo from F.W. Eaton to J.W. Wolter, at 2 (July 12, 1977). [Attachment 12].

<sup>16</sup> “Marketing Problems Related to OSHA, EPA”, at 7 (Feb. 11, 1977). [Attachment 13]

<sup>17</sup> Memo from Julie Yang to J.W. Wolter (Aug. 4, 1978). [Attachment 14] Grace characterized the Super Clean results as “disappointing”. See Super Clean Vermiculite Trials, at 5 (June 9, 1978). [Attachment 15]

<sup>18</sup> Eaton Deposition, at 100. [Attachment 8]; Memo from F.W. Eaton to D.M. Kirven (Nov. 23, 1977). [Attachment 16]

<sup>19</sup> Memo from F.W. Eaton to J. Wilson, at 1 (Oct. 4, 1979). [Attachment 17]

successful in finding a way of installing zonolite attic insulation without having exposures above one fiber per cc. You can make it super clean and it's still above 1. You can put all the soap you wanted on it and it still wouldn't be below 1.<sup>20</sup>

Desperate to get results that could meet the OSHA standard (and avoid having to affix an asbestos caution label), Grace continued manipulating the vermiculite and its testing method. Nevertheless, it could not meet the OSHA standard unless it divided its air test results by four.<sup>21</sup> Grace justified reducing the actual fiber count by asserting that a homeowner would not install ZAI for more than two hours – i.e., one quarter of an eight-hour work day (the OSHA measuring time).<sup>22</sup> Grace ignored the facts that: (1) it had previously advertised ZAI as a weekend “family fun-type project” that would take four hours;<sup>23</sup> (2) its own ZAI installation tests took over two hours;<sup>24</sup> and (3) it knew contractors would be repeatedly exposed while installing ZAI in hundreds of homes.<sup>25</sup> But, by using this mathematical manipulation, Grace was able to continue selling ZAI for several more years.<sup>26</sup>

By 1984, OSHA was again considering lowering its asbestos standard by a factor of

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<sup>20</sup> Hamilton Deposition, at 120-21. [Attachment 4]

<sup>21</sup> Although Grace was fixated on trying to meet the OSHA standard, that standard was neither intended for homeowners, nor a safe exposure level. See 51 Fed. Reg. 22,612 (June 20, 1986) [“Significant risk” of asbestos disease remains at OSHA exposure level]. [Attachment 20]; Hamilton Deposition, at 122 [stating that the OSHA standard is not applicable to homeowners or children]. [Attachment 4]

<sup>22</sup> Eaton Deposition, at 23. [Attachment 8]

<sup>23</sup> “Keep the Hot Out and the Cool In” advertisement; Data Sheet (July 15, 1980); Zonolite Spot Commercials [describing ZAI as a “four hour miracle”]. [Collectively attached as Attachment 18]

<sup>24</sup> Eaton Deposition, at 53. [Attachment 8]

<sup>25</sup> “Big Builders, Small Builders – All Agree! Zonolite Insulating Fill ‘Is Easiest of All to Install!’” advertisement. [Attachment 19]

<sup>26</sup> Grace also artificially lowered its air readings by using a “discriminatory counting” microscopy method that underestimated results by as much as seventy percent compared to OSHA-required counting rules at the time. See Memo from W.J. McCaig to J.W. Wolter (Aug. 13, 1985). [Attachment 92]; Deposition of Harry Eschenbach in United States v. W.R. Grace & Co., at 72 (Sept. 26, 2002) [stating that Grace used discriminatory counting for ZAI user exposure tests]. [Attachment 93—“Eschenbach Deposition”]

10 from 2 f/cc to 0.2 f/cc.<sup>27</sup> ZAI could not meet the proposed standard even using Grace's minimalist testing and "new math". Without ever admitting a concern over asbestos in ZAI, Grace withdrew the product from the market in 1984.<sup>28</sup>

#### **B. Grace Avoided Testing ZAI Under Foreseeable Disturbance Conditions**

One set of tests notably absent from Grace's 1970s-era testing is analysis of ZAI fiber release under conditions of disturbance after installation. The Grace officials in charge of ZAI testing confirmed that Grace did no such testing despite being urged to test ZAI under "worst case conditions".<sup>29</sup> Nevertheless, Grace represented to government agencies that once ZAI was in place, homeowners would have no further exposure.<sup>30</sup> Grace purported to support this assertion by testing it did in homes where ZAI had previously been installed. But the ZAI Claimants' investigation has revealed that this testing consisted of Grace simply putting an air monitor up into a quiet attic, closing the door and coming back several hours later.<sup>31</sup> Not surprisingly, since no one was in the attic and nothing was going on, the results showed little or no fiber release.

In contrast, when the Canadian government conducted a major remodel in ZAI buildings, its researchers reported fiber levels of up to 6.8 f/cc—more than sixty times the

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<sup>27</sup> OSHA announced its intention to lower the asbestos standard in 1983 and eventually made this change in 1986. See 51 Fed. Reg. 22,612 (June 20, 1986). [Attachment 20]

<sup>28</sup> Grace memo to Building Products Sales Force (Jan. 1984). [Attachment 21]

<sup>29</sup> Eaton Deposition, at 46. [Attachment 8]; Deposition of Elwood Wood, at 100 (Feb. 5, 2003). [Attachment 24—"Wood Deposition"]; Memo from M.M. Williams to E.S. Wood (May 31, 1977). [Attachment 88]

<sup>30</sup> Letter from Elwood Wood to Dale Ray, CPSC, at 3. (Apr. 1, 1980) ["Tests indicate no residual fiber release following installation."]. [Attachment 25]

<sup>31</sup> Eaton Deposition, at 45-46. [Attachment 8]

current OSHA permissible exposure level.<sup>32</sup> When measured using the more sophisticated transmission electron microscope, the asbestos fiber counts were as high as 174 f/cc.<sup>33</sup> Likewise, when the ZAI Claimants' experts simulated renovation using typical contractor methods,<sup>34</sup> they too got significant asbestos fiber release from ZAI.<sup>35</sup>

Considering the nature of ZAI, there really is no surprise in these results. The ZAI tested by the Canadian government and ZAI Claimants' experts is the same product that was poured decades ago and gave Grace high fiber readings. Unlike virtually all other asbestos products, which were mixed with gypsum or cement binders and installed either wet (to harden) or in a preformed manner (like pipe insulation), ZAI was never anything more than a loose pile of asbestos-containing rubble. Once poured into place, it sat there, but it neither hardened nor chemically reacted to take a "set". In short, ZAI has gotten no safer over the years. Its lethal potential remains constant, awaiting only the application of some disturbing force.

### **C. The Grace "1% Argument" is Neither Factually Nor Legally Viable**

Grace's consistent mantra to regulatory agencies was that ZAI contained less than 1% asbestos and, therefore, did not pose a potential health or contamination threat. Grace attempted to capitalize on an EPA political decision in the early 1970s that designated only products with more than 1% as "regulated asbestos-containing material". When EPA banned

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<sup>32</sup> Pinchin Environmental, "Final Report Site Assessment Vermiculite Removal Building E-12 C.F.B. Shilo, Shilo Manitoba", at i (Apr. 3, 1977). [Attachment 26—"Pinchin Report"]

<sup>33</sup> *Id.*

<sup>34</sup> An experienced contractor who viewed the Claimants' simulation videos testified that the work depicted typical scenarios, and was even being done more carefully than an actual contractor would. Deposition of Ralph Mold, at 69-73 (Feb. 28, 2003). [Attachment 27—"Mold Deposition"] He also testified that the Canadian test methods were typical of work he has performed around ZAI. *Id.*, at 73-77.

<sup>35</sup> William M. Ewing, "Zonolite Attic Insulation Report", Attach. 2, at 13-14 (Mar. 19, 2003) [counts of 3-14 f/cc (PCM) and 1-16 s/cc > 5  $\mu$ m (TEM)]. [Attachment 28—"Ewing Report"]

the spraying of asbestos-containing products in 1973 (including Grace's spray fireproofing, "Monokote"), Grace reformulated Monokote without the addition of asbestos, but knew it still contained asbestos-contaminated vermiculite.<sup>36</sup> Because the vermiculite in Monokote was mixed with a gypsum binder and applied wet, Grace had successfully argued to EPA that it should not extend its asbestos ban to the spraying of this cementitious product with a small amount of asbestos.<sup>37</sup>

In the early 1980s, Grace resurrected its "1% argument" for ZAI, arguing to the CPSC that a 1% asbestos product could not be a potential hazard because EPA had not previously regulated products with that percent asbestos.<sup>38</sup> Of course, Grace was comparing "apples" (wet-applied cementitious products) to "oranges" (dry-poured, unbound vermiculite). But this rear guard action brought Grace a few more years of sales.

At an early stage in these proceedings, Grace advanced the same argument to this Court, embellishing it by claiming that ZAI's asbestos content would never approach 1%:

Everyone agrees, Your Honor, at least in the Barbanti preliminary injunction hearing, their experts and our experts, this material, the finished product, contains by weight one one-hundred to one one-thousandth of one percent of asbestos, if it's there at all.<sup>39</sup>

The evidence uncovered by the ZAI Claimants now shows that ZAI can contain much more asbestos than Grace has ever admitted. Reports from ZAI testing around the country show

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<sup>36</sup> Pre-1973, Monokote contained approximately 29% vermiculite, 58% gypsum and 12% chrysotile asbestos. Grace Lab. Data Book No. 104, at 85 (Nov. 1, 1968). [Attachment 29]; Post-1973, Monokote replaced the asbestos with shredded paper and fiberglass. City of Greenville v. W.R. Grace & Co., 827 F.2d 975, 976 (4<sup>th</sup> Cir. 1987).

<sup>37</sup> Letter from Bruce Williams to Robert L. Sansom (July 7, 1972). [Attachment 30]

<sup>38</sup> Letter from W.R. Grace to CPSC, at 6 (Feb. 14, 1980). [Attachment 31]

<sup>39</sup> Omnibus Hr'g Tr., at 46 (Sept. 23, 2002). [Attachment 32] ZAI Claimants' Counsel does not question Grace's Counsel's good faith in making this representation since Counsel likely believed at their early stage of understanding the ZAI problem that ZAI only contained this minuscule amount of asbestos. That was Grace's consistent response to everyone (including counsel) who inquired.



that far from being .001% asbestos (10 parts per million), ZAI can contain up to 5% asbestos<sup>40</sup> (50,000 parts per million). Indeed, Grace's own expert had to concede that even using his testing method designed to minimize ZAI's asbestos content, he found asbestos in the ZAI home tested by Grace at levels up to 2.5%.<sup>41</sup> This is 250 times the maximum amount Grace told this Court.

For several reasons, it should come as no surprise to Grace that the asbestos levels in ZAI vary so widely. First, ZAI was not one product formulation, but actually a series of product formulas using different sizes of vermiculite ore, some more "friable" than others.<sup>42</sup> For this reason, one of the steps Grace took after the alarming ZAI installation tests of the mid-1970s was to suspend the use of a particularly dusty ore size ("Libby 3") for ZAI.<sup>43</sup>

The variability in ZAI asbestos content is also the direct result of the variability in asbestos content of the Libby vermiculite ore. As Grace's chief microscopist noted, "In reality, we know we have considerable variation in feed quality from minute to minute, hour-to-hour, and certainly from pile-to-pile."<sup>44</sup> Grace's asbestos removal process operated at an established efficiency. If one ore batch entering the process had more asbestos than another, the first batch would produce ZAI with more asbestos. Grace documents record variability in the vermiculite ore ranging from 9.5 – 15.5% tremolite.<sup>45</sup>

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<sup>40</sup> Memo from J.M. Spiak to R.L. Asher (July 2, 1987) [attaching article on ZAI with asbestos content of "1, 2 and 5 percent"]. [Attachment 33]; see also J. of Light Constr. at 14 (May 2003) [vermiculite sample may contain "asbestos up to 5% or so" [citing EPA official, Jim Christiansen]]. [Attachment 34]; Pinchin Report, at 1 [sample of ZAI with 5-10% asbestos]. [Attachment 26]

<sup>41</sup> Deposition of Richard Lee, at 72 (June 6, 2003). [Attachment 35—"Lee Deposition"].

<sup>42</sup> "Friable" refers to the ability of a product to be pulverized with hand pressure.

<sup>43</sup> Memo from F.W. Eaton to J.W. Wolter, at 2 (July 12, 1977). [Attachment 12]

<sup>44</sup> Memo from J.C. Yang to H.C. Duecker, at 6 (Feb. 23, 1976). [Attachment 36]

<sup>45</sup> J.C. Yang Request for Technical Service, at 2 (Sept. 23, 1976). [Attachment 37]

Finally, the asbestos content of ZAI ore changed over time as Grace intensified its asbestos removal efforts. As noted earlier in this memo, Grace's asbestos removal efforts did not become a priority until the mid-1970s. As time went by, Grace was able to remove a higher and higher percentage of asbestos from the ZAI ore, although it never could extract it all.<sup>46</sup> As a result, ZAI from the "early years" (1930s - mid-1970s) is likely to have more asbestos than ZAI from the last few years (up to 1984). But due to the variability in vermiculite ore, even this generality may not hold true. Some "late ZAI" may still have more asbestos than "early ZAI" if the early ZAI came from a portion of the mountain that had less naturally occurring asbestos contaminant.

But whether ZAI has .001% or 5% asbestos is not ultimately the critical factor. The weight of the asbestos in ZAI is not controlling because asbestos fibers are infinitesimally light. Rather, it is the extreme "friability" of ZAI that makes it such an effective contaminant and so potentially lethal. This was recognized twenty-five years ago in an internal confidential memo by Grace's general counsel. In commenting on Grace's proposed representation to regulatory agencies that ZAI had 1% asbestos or less, Grace's corporate lawyer noted that they should be focusing on fibers, not weight:

I have reviewed the Draft Proposal for MSDS for vermiculite concentrate ore finished products and have the following comments:

...

(b) I understand that the reason for wanting to indicate the percent by weight of tremolite content is to give the recipient the indication that he is not getting a product containing commercial asbestos and that the tremolite asbestos contaminant content is low. However, I think that this could be construed as an invitation for the recipient to believe that because the percent tremolite asbestos content is low that the amount of tremolite asbestos fiber released in handling the

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<sup>46</sup> By late 1979, a Grace official noted that Grace had reduced tremolite content up to 85% and its plants were probably at "optimum conditions" as far as removing tremolite was concerned. Tremolite Reduction Program Progress Report Summary, at 6 (Oct. 17, 1979). [Attachment 38]

product can be assumed to be less than this prescribed by the asbestos standard. As you know, respirable tremolite asbestos fibers are light and countless numbers may be present even though the percent by weight is low. ...

...

In addition because the tremolite content of the ore body may vary one could expect that the percent asbestos tremolite content of the ore concentrate to vary so that unless the percent stated when high enough to cover all contingencies the MSDS from time to time could be in fact inaccurate.

...

(c) ... Further your statement that "the dust has a negligible "asbestos fiber" (less than 0.5% by weight) fraction." seems confusing. As indicated above a 0.5% tremolite asbestos fiber content could be significant because respirable fibers are light. ...<sup>47</sup>

For this reason, Grace's counsel advised, "I do not recommend inclusion of a statement relating to percent content of tremolite asbestosform (sic) mineral."<sup>48</sup>

The EPA official in charge of the vermiculite cleanup in Libby recently explained that 1% asbestos in a product like ZAI is indeed a hazard:

Jim Christianson notes that although an individual sample of vermiculite may contain anywhere from a nondetectable amount of asbestos up to 5% or so, a reading at or near the bottom of that range definitely does not mean that the material is safe. "The 1 percent standard was developed for things like pipe wrap, where you're talking about a solid material," he says. "The asbestos in vermiculite is so friable and becomes airborne so easily that it's hazardous even at very low levels."<sup>49</sup>

The folly of relying on asbestos weight percentage instead of examining the nature of the product is illustrated by comparing Grace's application tests for ZAI and Monokote. Monokote contained approximately 12% asbestos, but was applied wet with a "cementitious"

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<sup>47</sup> Handwritten notes from O.M. Favorito to R.C. Ericson (Apr. 8, 1977) [emphasis added]. [Attachment 39] These notes are difficult to read, and the Claimants have provided their best reading of the document, along with a typewritten transcription.

<sup>48</sup> Id.

<sup>49</sup> J. of Light Constr., at 14 (May 2003) [quoting EPA official, Jim Christiansen]. [Attachment 34]

binder. Grace reported Monokote application fiber levels in the range of 0.5 to 2.5 f/cc.<sup>50</sup> Application tests for ZAI, a product that supposedly never exceeded 1% asbestos (less than a tenth of Monokote's asbestos), showed fiber levels as high as 11 f/cc.<sup>51</sup> Unlike Monokote, the asbestos in ZAI was simply lying with the vermiculite in the bag, as recognized by Grace's laboratory:

Microscopic examination of the vermiculite plates showed very dusty surface with either small vermiculite particles or small fibers adhering to them ....<sup>52</sup>

Grace's general counsel was quite correct that ZAI with a small weight percent of tremolite can have "countless numbers" of asbestos fibers. Claimants' experts have calculated that at 0.1% tremolite, a typical thirteen pound bag of ZAI would contain only six grams of asbestos by weight, but approximately 12.5 trillion asbestos fibers.<sup>53</sup>

#### **D. ZAI Contaminates Because It Is Ultrafriable**

Regulatory authorities accustomed to dealing with asbestos-containing products that were mixtures of asbestos and binders can perhaps be forgiven for awakening so late to the asbestos contamination and hazard potential of ZAI. Those authorities had never encountered a product as friable as ZAI. Indeed, it is doubtful if one exists. ZAI's ultra-friability permits it to contaminate readily and release its asbestos fibers easily with

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<sup>50</sup> See Werby Lab. Monokote Application Test Results (July 16, 1970) [fibers longer than five microns]. [Attachment 40]

<sup>51</sup> See Grace ZAI Actual Home Attic Tests (July 7, 1977). [Attachment 41] It is quite significant that ZAI had higher fiber release than Monokote, because Monokote has itself been found unreasonably dangerous. City of Greenville, 827 F.2d at 979.

<sup>52</sup> Memo from J.C. Yang to H.C. Duecker (Feb. 26, 1976). [Attachment 42]

<sup>53</sup> Richard Hatfield & William Longo, "Zonolite Attic Insulation Report", at 17 (Apr. 4, 2003). [Attachment 43—"Hatfield & Longo Report"]

disturbance.

The ZAI Claimants' study of thousands of Grace documents has revealed that ZAI's ultra-friability was well known and a vexing concern to Grace. This concern manifested itself in several ways. For instance, Grace discovered in its "Super Clean" vermiculite project that even though it was removing more asbestos from the vermiculite ore at the Libby mine, the simple act of shipping the product agitated the vermiculite, freeing asbestos fibers that had been loosely held between vermiculite plates. Grace documents reflect this perplexing finding:

Although there was considerable rock and tremolite reduction in the super clean concentrate, net reduction to user exposure of tremolite fibers was disappointing in the tests conducted.  
54

A 1975 Grace memo confirms that ZAI ore was known to increase in dustiness with each step in the production process: "As we know, breakdown occurs in bagging, handling, shipping, etc."<sup>55</sup> This inherent friability was a characteristic of both the vermiculite and its tremolite contaminant, as indicated by a Grace laboratory memo examining tremolite fiber removed from Libby #2 (a ZAI ore source):

The tremolite fiber bundles picked out from Libby #2 are fairly clean and free of rocks, greyish in color, soft, and sometimes waxy in touch. They broke down easily to fine fibrils when degraded ...<sup>56</sup>

Grace discovered that ZAI was essentially a reservoir of loose asbestos fibers. Its "drop testing" showed that ZAI which had been dropped once (and released fibers) would release additional fibers with each reuse: "The Libby #2 material used continued to release

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<sup>54</sup> Super Clean Vermiculite Trials, at 5 (June 9, 1978). [Attachment 15]

<sup>55</sup> Memo from R.H. Locke to J.L. Wright (Nov. 5, 1975). [Attachment 44]

<sup>56</sup> Memo by Julie C. Yang, "Characterization and Preparation of Respirable Sized Tremolite Fiber in Vermiculite for Animal Studies", at 2 (Apr. 8, 1976). [Attachment 45]

significant quantities of new fiber with each re-use.”<sup>57</sup> A Grace scientist recognized the recurring nature of ZAI exposure:

Following initial removal of a quantity of fiber sufficient to create airborne concentrations double the current [occupational] ceiling level, it appears expanded vermiculite still retains significant quantities of fiber which can be released in subsequent use.<sup>58</sup>

This recurring fiber release potential ensures that ZAI will remain a perennial problem in homes.

### ARGUMENT

#### **I. Whether Measured by Surface or Air Testing, ZAI Has Indisputably Created a Compensable Bankruptcy Claim by Contaminating ZAI Homes, With the Potential for Further Asbestos Release on Disturbance**

The foreseeable consequence of ZAI’s extreme friability – asbestos fiber release into homes -- has indeed occurred as evidenced by surface dust testing. That testing reveals millions of loose ZAI tremolite fibers in the surface dust of attics in ZAI homes. Substantial asbestos property damage precedent confirms that surface dust testing is an accepted method of demonstrating asbestos contamination. Indeed, some courts have dismissed cases where the building owner failed to produce surface dust evidence.

Grace is fixated here, as it has been throughout the asbestos litigation, on air testing. Grace contends that unless air tests in ZAI homes reflect continuous levels of asbestos that exceed some standard (although there is no air standard for homes), there can be no asbestos property damage claim. This is a non-sequitor. The air is not part of the home for which the

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<sup>57</sup> Memo from R.H. Locke to H.A. Brown, at 3 (Aug. 5, 1976). [Attachment 46]

<sup>58</sup> Id.

property damage claim is brought.<sup>59</sup> As the ZAI Claimants show below, EPA has properly focused on the building and consistently rejected air testing as the primary means of determining whether an asbestos problem exists. Moreover, in the case of ZAI, Grace's air test fixation does it no good. Scientific evidence already accumulated shows that ZAI can release enormous amounts of airborne asbestos fiber with the inevitable disturbances that will eventually occur in all homes. So certain is this inevitable release that even Grace's industrial hygiene expert agrees that ZAI needs to be carefully and professionally removed before such disturbance.<sup>60</sup>

**A. Surface Dust Testing in ZAI Homes Confirms Extensive ZAI Asbestos Fiber Release**

The ZAI Claimants are seeking recovery for asbestos injury to their homes - not personal injury or fear of cancer from asbestos in the air. The ZAI Claimants do not contend that the air in their homes is continuously filled with tremolite fibers. Their focus is, as it should be, on their structures, the surfaces therein, and the restrictions on the use of their homes caused by ZAI.

Settled dust testing is a technique long known in the industrial hygiene profession. In contrast to air testing, which measures whether the air is contaminated at a given moment, surface dust testing indicates whether a building has become contaminated over time. As early as 1935, a leading Harvard scientist was examining asbestos in settled rafter dust.<sup>61</sup> The famous asbestos researcher, Dr. Irving Selikoff, conducted settled dust testing in homes

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<sup>59</sup> Grace's expert, Dr. Corn, admitted that a person purchases only the building and land when she buys a home, not the air inside it. Corn Deposition, at 169. [Attachment 3]

<sup>60</sup> Corn Deposition, at 113. [Attachment 3]

<sup>61</sup> Cornelius S. Hurlbut, Jr., Mineralogy of Asbestos Dust, J. of Indus. Hygiene, 17:289-98 (1935). [Attachment 48]

where asbestos workers had previously lived to determine the longevity of asbestos in a home.<sup>62</sup>

As part of their effort to determine if ZAI: (1) could release asbestos fibers upon disturbance; and (2) whether it had already done so, the ZAI Claimants' experts took air and settled dust samples in three ZAI homes. They collected dust samples to record pre-existing contamination prior to activities that disturbed the ZAI. The results showed significant prior asbestos release from ZAI. In one home (Busch), a sample from an attic walkway board showed forty-seven million asbestos structures per square foot.<sup>63</sup> In another home (Matthews), a dust sample from the top of a trunk in the attic had nineteen million asbestos structures per square foot.<sup>64</sup> Other dust testing in the attic gave results ranging from not detected to thirty-five million asbestos structures per square foot. Similar testing in a Maryland home reflected thirty-one to ninety-two million asbestos structures per square foot.<sup>65</sup> A dust sample taken from under the vermiculite between the rafters showed, just as Grace had discussed years earlier, that there was still plenty of asbestos left in ZAI after pouring. That sample contained 1.8 billion asbestos structures per square foot.<sup>66</sup>

These results are especially significant in the context of ZAI for several reasons. First, and most importantly, Grace's experts admit there is no natural "background" level of tremolite asbestos contaminant in homes (with the possible exception of Libby,

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<sup>62</sup> Irving J. Selikoff, et al., Asbestos Air Pollution, Archives of Env'tl. Health, 25:1-13 (1972). [Attachment 49]

<sup>63</sup> Ewing Report, at Attach. 2, App. B. [Attachment 28] A structure is defined by EPA as either an asbestos fiber or a collection of asbestos fibers known as a bundle, a cluster or a matrix. Bundles, clusters or matrices would normally contain many asbestos fibers.

<sup>64</sup> Id.

<sup>65</sup> Hatfield & Longo Report, at 22. [Attachment 43]

<sup>66</sup> Id.



Montana).<sup>67</sup> Unlike chrysotile asbestos (approximately 97% of United States asbestos usage), tremolite was not used in industrial and commercial products. While asbestos defendants have attacked dust testing in past cases, claiming it cannot prove the source of the asbestos contamination because chrysotile is ubiquitous, even Grace's experts agree that tremolite in surface dust in ZAI homes came from the ZAI.<sup>68</sup> Second, the absence of any ambient tremolite means that finding tremolite in settled dust reflects contamination.<sup>69</sup> Again, this will come as no surprise to Grace since its internal memos regularly characterized tremolite in ZAI as a "contaminant".<sup>70</sup> The same contaminant that Grace measured in the 1970s is contaminating ZAI attics today.

### 1. Courts Have Relied on Dust Testing To Determine Actionable Contamination

During the twenty-year history of asbestos property damage litigation, dust sampling has been recognized by numerous courts as an appropriate way to measure building contamination for an actionable claim. In the seminal case of City of Greenville v. W.R. Grace & Co., 640 F. Supp. 559 (D.S.C. 1986), aff'd, 827 F.2d 975 (4<sup>th</sup> Cir. 1987), reh'g denied, 840 F.2d 219 (4<sup>th</sup> Cir. 1988), the trial court summarized the evidence as follows:

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<sup>67</sup> Deposition of William Hughson, at 144 (June 6, 2003). [Attachment 50—"Hughson Deposition"]

<sup>68</sup> Lee Deposition, at 244-45. [Attachment 35] Grace medical expert, Dr. Hughson, added that tremolite is ten times as toxic as chrysotile. Hughson Deposition, at 76-77. [Attachment 50]

<sup>69</sup> Courts have found actionable property contamination where the levels of a toxic substance significantly exceed background. See, e.g., Hazelwood Farm, Inc. v. Liberty Oil & Gas Corp., 844 S.2d 380 (La. Ct. App. 2003) [radiation levels from oil drilling residue considerably above background warranted remediation]; Arkwright Mut. Ins. Co. v. Nat'l Union Fire Ins. Co., No. 90 Civ. 7811(KC), 1993 WL 14448 at \*2 (S.D.N.Y. Jan. 11, 1993) [PCBs "found in quantities far in excess of any normal background level" evidenced toxic release and not a pre-existing condition]. Here, everyone agrees there is no tremolite background; i.e., there should be no tremolite in homes.

<sup>70</sup> See, e.g., Grace laboratory evaluation (Mar. 2, 1976). [Attachment 52]; "Personal and Confidential" Memo from E.S. Wood to Distribution List at Bates p. 15001413 (Mar. 1, 1977) [discussing the need to determine the "[t]remolite contaminant levels in each of our end products made from both S.C. and Libby ore]. [Attachment 53]

The evidence further showed that the asbestos material in the City Hall was falling off the beams in some areas and was laying in pieces on top of ceiling tiles. Greenville's experts found invisible asbestos fibers on every building surface tested in amounts up to millions of fibers per square foot of surface area. Asbestos had contaminated ceiling tiles and carpets.

640 F. Supp. at 563.

In affirming, the Fourth Circuit noted:

Greenville's experts took samples from the office areas of the city hall and found that a significant number of asbestos fibers had contaminated areas in which people worked.

827 F.2d at 979-80.

As it has done in this case, Grace promoted air sampling as the only means to determine whether a property damage claim existed. The Fourth Circuit rejected this approach:

At most, however, Grace's evidence merely created a jury question as to how much asbestos had been released into the city hall. From the evidence presented by Greenville, the jury reasonably could have found that the city hall was contaminated by significant amounts of asbestos, and that the asbestos had come from the fallen Monokote and Monokote dust.

827 F.2d at 980.

The Tenth Circuit similarly highlighted the importance of settled dust evidence when it dismissed a school district's claim because it failed to introduce evidence such as "surface analyses demonstrating contamination." Adams-Arapahoe Sch. Dist. No. 28-J v. GAF Corp., 959 F.2d 868, 874 (10<sup>th</sup> Cir. 1992). In a later case, the Tenth Circuit reaffirmed the validity of dust testing to prove contamination noting that, unlike the Adams-Arapahoe case, the plaintiff had met its burden of showing contamination:

At trial, [Plaintiffs] did more than present evidence that [the product] ... contained asbestos or that [it] could release

asbestos dust if disturbed ... The [Plaintiffs] showed that there were significant amounts of asbestos fibers not only on top of a display case but also near an information booth, as well as in an area near certain lighting fixtures and on carpeting ...

Perlmutter v. United States Gypsum Co., 4 F.3d 864, 868 (10<sup>th</sup> Cir. 1993).

Numerous other courts have similarly recognized that an asbestos property damage claim focuses on the building<sup>71</sup> and that a showing of significant asbestos fiber release in settled dust supports a property damage claim, whether the evidence is labeled “contamination” or proof that the product is “unreasonably dangerous”.<sup>72</sup> The Fourth Circuit noted, for instance, that even a small danger can be “unreasonable” if the utility of asbestos in the product is low:

We think that since including asbestos in the Monokote formula had practically no utility, the jury would not have had to find a great degree of risk resulting from the asbestos to conclude that Monokote was unreasonably dangerous.

City of Greenville, 827 F.2d at 979.

Here, as a top Grace official has admitted, the utility of tremolite in ZAI was zero.<sup>73</sup> The risk/utility scale tips even further against Grace, since ZAI itself was hardly essential to

<sup>71</sup> See, e.g., Cheshire Med. Ctr. v. W.R. Grace & Co., Civ. No. 88-516-M (D.N.H. July 26, 1993) [Attachment 54]; Mayor & City Council of Baltimore v. Keene Corp., No. 84268068/CL25639 (Balt. Cir. Ct. Feb. 19, 1992) (Tr. at 5454-55) [Attachment 55]; Clayton Ctr. Assocs. v. W.R. Grace & Co.-Conn., No. 581479 (Mo. Cir. Ct., St. Louis Co., Feb. 18, 1992) [Attachment 56]; Blue Cross & Blue Shield of S.C. v. W.R. Grace & Co.-Conn., No. 6:89-1287-1 (D.S.C. May 30, 1991) [Attachment 57]; Board of Trustees of Johnson County Cmty. Coll. v. National Gypsum Co., No. 88-2031-0 (D. Kan. Jan. 9, 1990) [Attachment 58]; In Re: State & Regents' Bldg. Asbestos Cases, No. 99091/99082 (Minn. Dist. Ct., Dakota Co., Dec. 29, 1988) [Attachment 59]; MDU Res. Group, Inc. v. W.R. Grace & Co., No. A1-90-122 (D.N.D. May 26, 1992) (Tr. at 727-33) [Attachment 60]; Bunker Hill Towers Condo. Ass'n v. Prudential Ins. Co. of Am., No. C 638 821 (Cal. Super. Ct., Los Angeles Co., Apr. 6, 1992) (Tr. at 2931-56) [Attachment 61].

<sup>72</sup> See City of Greenville, 827 F.2d at 980 [asbestos contamination up to 8.5 million asbestos fibers per square foot was sufficient for the jury to have found “that the city hall was contaminated by significant amounts of asbestos” ... [and] “that the risks associated with Monokote so far outweighed the product’s utility as to render Monokote unreasonably dangerous.”]

<sup>73</sup> Wood Deposition, at 51. [Attachment 24]

society. In fact, according to Grace, ZAI was a poor competitor in the insulation market whose sales withered due to consumer disinterest.<sup>74</sup>

## 2. Regulatory Agencies Have Recognized Settled Dust as Evidence of an Asbestos Building Problem

EPA has long been concerned about the “resuspension of previously released fibers that have settled onto floors and other surfaces”.<sup>75</sup> Testing by ZAI Claimants’ experts confirms that asbestos-containing settled dust in ZAI homes can create repeated exposures every time the ZAI is disturbed. EPA’s most recent asbestos in buildings guidance document notes that “[d]ry sweeping or dusting can result in asbestos fibers being re-suspended into the building’s air and therefore should not be used”.<sup>76</sup> EPA has also used dust sampling in its recent Libby, Montana, evaluation, as it informed the public:

Asbestos fibers in dust are measured using (TEM) after an indirect preparation step. The indirect preparation involves dissolving the filter and removing everything but asbestos fibers.<sup>77</sup>

The settled dust testing method used by ZAI Claimants’ experts is an ASTM approved method.<sup>78</sup> Reports on asbestos settled dust testing have been published in the peer reviewed literature,<sup>79</sup> and the technique has been independently verified as scientifically effective and reproducible.<sup>80</sup>

<sup>74</sup> Grace memo to Building Products Sales Force (Jan. 1984). [Attachment 21]

<sup>75</sup> 47 Fed. Reg. 23,360, 23,361 (May 27, 1982). [Attachment 62]

<sup>76</sup> EPA, Managing Asbestos in Place, at 19 (1990). [Attachment 63]

<sup>77</sup> EPA Fact Sheet: Asbestos Sampling in Libby, MT (May 2000) (emphasis in original). [Attachment 64]

<sup>78</sup> ASTM Standard D5755, “Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Concentrations”. [Attachment 65]

<sup>79</sup> J.R. Millette, et al., Settled Dust Analysis Used in Assessment of Bldgs. Containing Asbestos, Microscope, at 215-20 (1990). [Attachment 66]; R.L. Hatfield, et al., A Study of the Reproducibility of the Micro-Vac Technique As A Tool for the Assessment of Surface Contamination in Bldgs. with Asbestos-Containing Materials, Advances in Envtl. Measurement Methods for Asbestos, at 301-312 (M.E. Beard & H.L. Rook eds., 2000). [Attachment 67]

### 3. **Grace's Microscopy Expert Has Been Heavily Involved in Settled Dust Analysis for Building Owners**

While Grace's microscopy expert, Dr. Lee, has attempted to downplay use of settled dust testing here, discovery revealed that he and his company have analyzed hundreds of settled dust samples for building owners in just the past year.<sup>81</sup> Dr. Lee admitted that these building owners used his results to determine asbestos contamination.<sup>82</sup> In prior litigation, ZAI Claimants' counsel discovered that Dr. Lee had even developed his own settled dust sampling device that he was actively marketing throughout the country.<sup>83</sup>

### 4. **Outside the Courthouse, Grace Has Been Concerned About Settled Dust in Its Own Buildings**

The ZAI Claimants' investigation has revealed that Grace was itself concerned about "residual surface contamination" in its facilities.<sup>84</sup> Grace's safety director reported in 1969 that a Grace facility with asbestos had "dust accumulations ... all horizontal surfaces was extremely heavy ... Building vibration dislodged ledge accumulations creating a vicious cycle."<sup>85</sup> In 1983, when Grace was still selling ZAI, an internal Grace memo recognized the dangers of asbestos in vermiculite dust:

I feel the employees do not comprehend the relationship between a pile of spilled vermiculite and a health hazard. Fibers are basically an invisible villain. WE must reeducate ourselves and our employees to treat vermiculite as a "hazardous" product.<sup>86</sup>

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<sup>80</sup> Owen S. Crankshaw, Quantitative Evaluation of the Relative Effectiveness of Various Methods for the Analysis of Asbestos in Settled Dust, Research Triangle Inst. (1996). [Attachment 68]

<sup>81</sup> Lee Deposition, at 281. [Attachment 35]

<sup>82</sup> Id.

<sup>83</sup> See R.J. Lee Group, Inc., Surface Sampling Strips brochure. [Attachment 69]

<sup>84</sup> Asbestos Survey, W.R. Grace – Acton Facility, at Bates p. R002195 (Oct. 1988). [Attachment 70]

<sup>85</sup> Memo from Peter Kostic to G.C. Cunningham (June 20, 1969). [Attachment 71]

<sup>86</sup> Memo from T.E. Winkle to W.R. Wright (June 15, 1983) (emphasis in original). [Attachment 72]

When remodeling one of its facilities, Grace discovered asbestos-contaminated dust on floors, beams and other horizontal surfaces. Even though it concluded that this dust contained no more than 2% asbestos, Grace issued specifications requiring special asbestos cleaning methods and precautions.<sup>87</sup> Likewise, when a Grace industrial hygienist found a “problem with asbestos dust contamination on the surfaces of materials stored in [a Grace facility]”, Grace ordered an “intensive cleanup”.<sup>88</sup> If Grace plants were facing a safety audit, they would spend days cleaning up settled dust “because of the recirculation issue”.<sup>89</sup> Yet Grace urges this Court to ignore the dust and look only to the air. As we show next, this is not only the wrong approach, but it does not help Grace here.

**B. Although Air Testing Has Been Rejected by the EPA and Courts As the Determinant of an Asbestos Property Damage Problem, Realistically Conducted Air Tests Confirm ZAI’s Propensity to Release Asbestos on Disturbance**

**1. EPA Has Examined Air Testing and Identified Its Deficiencies**

For over twenty years, Grace has been trying to get EPA to accept its view and proclaim that unless there is asbestos at a certain level in a building’s air, the building has no asbestos problem. Grace has consistently failed. The problems with Grace’s approach are that: (1) it measures the wrong thing; and (2) the air is inherently transitory.

As discussed above, the ZAI Claimants are concerned about the contamination of their homes. When that contamination is disturbed, it can certainly get into the air. But whether one measures the air when the asbestos is aloft or not, the fact remains that the

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<sup>87</sup> See Building Interior, Cleaning Specification (Mar. 21, 1984). [Attachment 73]

<sup>88</sup> Memo from T.E. Hamilton to D.C. Whiteman (Aug. 23, 1984). [Attachment 74]

<sup>89</sup> Hamilton Deposition, at 20-21. [Attachment 4]

asbestos contamination has been on the surface and, if disturbed, will get into the air. Eventually, it will settle to await the next disturbance and repeat the cycle. The problem does not go away regardless of the air readings.

As early as 1985 EPA rejected air sampling as a primary building assessment tool because “it measures only current conditions and provides no information about fiber release potential and future air levels”.<sup>90</sup> The proof of this statement is borne out clearly for ZAI. The ZAI Claimants’ testing shows that if one enters a ZAI-contaminated attic carefully, sets up air monitors and disturbs nothing, the monitors are likely to show little or no asbestos in the air.<sup>91</sup> However, if just a few minutes later, in the very same attic, one disturbs the ZAI and its dust, the asbestos air levels can rise to 3,000 times background levels.<sup>92</sup>

EPA reiterated its negative assessment of air testing in 1987:

EPA continues to discourage the use of air monitoring as the primary technique for assessing asbestos hazards, since that method only measures current conditions and provides no information about potential and future levels of fiber release.<sup>93</sup>

In a later guidance document, EPA emphasized that air monitoring can miss episodic events such as accidental disturbance of asbestos-containing materials.<sup>94</sup> That would obviously be a major concern with ZAI.

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<sup>90</sup> EPA, Guidance for Controlling Asbestos-Containing Materials in Bldgs., at 4-3 (June 1985). [Attachment 75]

<sup>91</sup> Ewing Report, Attach. 2, at 16. [Attachment 28]

<sup>92</sup> Ewing Report, Attach. 2, at 14. [Attachment 28]

<sup>93</sup> 52 Fed. Reg. 41,826, 41,838 (Oct. 30, 1987). [Attachment 76]

<sup>94</sup> EPA, Managing Asbestos in Place: A Bldg. Owner’s Guide to Operations and Maintenance Programs for Asbestos-Containing Materials, at 15 (July 1990). [Attachment 63]

Most recently, EPA told residents living near “Ground Zero” after September 11 about the limitations of passive air testing. EPA advised that if residents wanted to do air testing, they should first stir up the settled dust using fans or a leaf blower. As EPA stated, “In order to evaluate the concentration of asbestos in the air, the dust or fibers in the home need to be re-suspended.”<sup>95</sup> Considering the ultra-friability of ZAI, no one doubts that using fans or a leaf blower around it would send the air readings off the scale.

Other government agencies and international bodies have come to the same conclusion as EPA in discouraging reliance on air testing. The Ontario World Commission on Asbestos Matters noted:

We consider that while air sampling with transmission electron microscope analysis (TEM) can detect elevated fibre levels in a building at the time of air sampling, it does not in general provide a reliable basis for deciding on an appropriate control programme.<sup>96</sup>

The British Columbia government agreed:

Monitoring of airborne asbestos fibres (i.e., air sampling and fibre counting) is not a reliable technique for determining the potential for asbestos fibre release.<sup>97</sup>

In 1989, one of Dr. Selikoff’s chief assistants summarized why air sampling cannot determine if a building has an asbestos problem:

Air monitoring is generally not a satisfactory means of evaluating whether a specific control activity should be adopted since it only gives a value at one particular point in time and the circumstances are usually artificial. Absence of fibre contamination when no building activity is taking place does not provide any information on what may occur in the

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<sup>95</sup> EPA Response to September 11—WTC Residential Dust Cleanup Program: Modified-Aggressive and Aggressive Sampling (Aug. 6, 2002). [Attachment 77]

<sup>96</sup> Report of the Royal Comm’n on Matters of Health & Safety Arising from the Use of Asbestos in Ontario, at 600 (1984). [Attachment 78]

<sup>97</sup> Province of British Columbia, Control & Mgmt. of Friable Asbestos Materials, at 3 (1983). [Attachment 79]



future ... In general, abatement activities must be undertaken on the basis of the observed conditions and building circumstances rather than air monitoring.<sup>98</sup>

## **2. Grace Made Asbestos Abatement Decisions Without Reliance on Air Testing**

It is again ironic that Grace touts air sampling as the rosetta stone to determine asbestos contamination when Grace often took asbestos abatement action in its own buildings without relying on air testing. In a memo written while Grace was still selling ZAI, a Grace industrial hygienist recommended that air sampling not be used to determine whether to abate asbestos:

Stationery air samples were collected directly below the ceiling area where the asbestos is peeling. The levels are so low that they are below the detection limit of the fiber counting method. However, asbestos is peeling off the ceiling and it is possible that some employees may be exposed to concentrations of asbestos.

We recommend that you consider removing the material.<sup>99</sup>

At another facility, a different Grace official also discounted air testing:

There were "no visible fibers" detected in any of the three air samples taken in the machine shop at Travelers Rest.

The bulk sample analysis revealed chrysotile asbestos fibers to be well distributed throughout the spray-coated wall materials.

Since the wall coating material is flaking in most locations, I still believe there should be cause for concern.<sup>100</sup>

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<sup>98</sup> W.J. Nicholson, "Airborne Mineral Fibre Levels", IARC Non-Occupational Exposure to Mineral Fibres, at 252. (1989). [Attachment 80]

<sup>99</sup> Memo from T.E. Hamilton to J. McCarthy (Nov. 10, 1980). [Attachment 81]

<sup>100</sup> Memo from P.M. Connor to H.A. Eschenbach (Apr. 27, 1983). [Attachment 82]

When Grace's loss control insurance carrier visited a Grace warehouse, it told Grace that if the insulation in a plant "did contain asbestos that it be removed".<sup>101</sup> Air testing was not in the equation. Grace had the asbestos removed several months later.<sup>102</sup> In yet another facility, Grace discovered asbestos-containing material on the ceiling of a mechanical room. The air test results were much lower than the ZAI Claimants' results, but Grace ignored them in deciding to remove the material:

Also on the advice of our architect, we took air samples in the storage/mechanical room immediately after discovering the asbestos. The result of the air test, conducted on several occasions, was .002 fibers/cubic centimeter. Their readings indicated that the air did not have any asbestos fibers, and that the air was equivalent to outside air.

...

The only law concerning recommended asbestos removal guidelines from OSHA and the EPA is for schools. However, B&T's [Grace subsidiary] senior management felt that we should remove the material, just to be on the safe side.<sup>103</sup>

Grace has never satisfactorily explained why air testing must be used to determine if the "other guy" has an asbestos problem, but can be ignored by Grace.

### 3. Grace's Recent ZAI Testing Was Strictly Controlled to Produce the Lowest Fiber Counts Possible

Grace's air testing defense suffers an additional, significant weakness here. Its ZAI air sampling under reasonably foreseeable circumstances consists of limited testing in one home.<sup>104</sup> Although Grace had the opportunity to test under conditions that would simulate a major disturbance of ZAI, it choose not to do so.<sup>105</sup> The experts Grace hired suggested

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<sup>101</sup> Memo from P.J. Walsh to R.P. Turner (Apr. 15, 1986). [Attachment 83]

<sup>102</sup> Id.

<sup>103</sup> Memo from H. Baldeo to P. Reif (Oct. 13, 1988). [Attachment 84]

<sup>104</sup> Corn Deposition, at 46. [Attachment 3]

<sup>105</sup> Deposition of Donald Van Cura, at 67-69 (May 30, 2003). [Attachment 85—"Van Cura Deposition"]

a more extensive disturbance of ZAI in their protocol, but it was never done.<sup>106</sup> They also planned to do a ZAI vacuuming test, but that was never done.<sup>107</sup> The experts admitted they were permitted to do only “minor” activity.<sup>108</sup> They worked in such an artificially slow manner (to minimize fiber release), that a contractor reviewing their video testified he would not hire someone who worked so slowly.<sup>109</sup> They failed to simulate the activities Grace advertised for ZAI, including its use in renovation projects, room additions, disappearing stair installations and other remodeling jobs.<sup>110</sup> The experts never considered doing a “worst case scenario type situation”.<sup>111</sup> Yet a Grace scientist had urged twenty-five years earlier that ZAI should be tested under “worst case” conditions.<sup>112</sup>

The Grace test method was carefully structured to keep fiber counts low. After each activity, the attic air was exhausted, which prevented fibers from settling in the dust. The experts admitted homeowners would not do that.<sup>113</sup> In addition, Grace used a microscopy counting method developed by its perennial expert, Dr. Richard Lee, especially for the ZAI litigation. It eliminated 90% of the asbestos counted by calling it something else.<sup>114</sup>

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<sup>106</sup> Deposition of Steven Mlynarek, at 91-92 (June 19, 2003). [Attachment 86—“Mlynarek Deposition”]

<sup>107</sup> Mlynarek Deposition, at 92-93. [Attachment 86]

<sup>108</sup> Van Cura Deposition, at 86. [Attachment 85]

<sup>109</sup> Mold Deposition, at 71-72. [Attachment 27]

<sup>110</sup> “How to Prepare Newspaper Advertising That Sells” and other advertising materials. [Collectively attached as Attachment 89]

<sup>111</sup> Mlynarek Deposition, at 123. [Attachment 86]

<sup>112</sup> Memo from M.W. Williams to E.S. Wood, et al., at 2 (May 31, 1977) [“If attic fill tests are used a ‘worst’ case method should be employed.”]. [Attachment 88]

<sup>113</sup> Mlynarek Deposition, at 99-100. [Attachment 86]

<sup>114</sup> Richard J. Lee, “Opinion of Dr. Richard J. Lee in the matter of In Re: W.R. Grace & Co., et al.”, at 32 (Apr. 15, 2003). [Attachment 51] This aberrational counting technique and other activities of Dr. Lee are the subject of a separate Daubert motion.

There are also serious questions about the applicability of this single, limited test beyond its specific circumstances. The Grace experts did not know that ZAI had different ore types, different asbestos content over time, different asbestos content in the ore veins, that some ZAI had a spray on it, and numerous other factors that make air testing in one home an exceedingly weak reed on which to base conclusions about the air in a million or more homes.<sup>115</sup> And despite all their restrictions and manipulations to lower the fiber readings, one of the scientists supervising the Grace test still conceded that homeowners should use trained professionals if they have to do a major disturbance of ZAI.<sup>116</sup>

Grace's single test purporting to show low air readings in 2002 is inconsistent with its confidential air testing in the 1970s showing that pouring ZAI into place released exceedingly high levels of asbestos fiber.<sup>117</sup> Grace must explain how the fibers present at pouring have vanished. Grace's recent test is also inconsistent with virtually all other ZAI data, including the non-litigation testing by the Canadian government,<sup>118</sup> which showed fiber levels hundreds of times the Grace numbers, as well as the ZAI Claimants' results. The Grace air testing also conflicts with numerous, previously discussed internal Grace documents recognizing the extreme friability of ZAI, the enormous number of fibers in ZAI and the ease with which it could repeatedly release asbestos fibers with disturbance. Grace's air testing defense totters under the combined weight of all these discrepancies.

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<sup>115</sup> Mlynarek Deposition, at 77-82. [Attachment 86]; Deposition of Peter Lees, at 77 (June 20, 2003). [Attachment 87—"Lees Deposition"].

<sup>116</sup> Mlynarek Deposition, at 160-62. [Attachment 86]

<sup>117</sup> Grace ZAI Test Notes (July 11, 1977) [4.9 – 11.3 f/cc in simulated attic tests and 8.9 f/cc in actual attic tests]. [Attachment 90]; Binder Development Program P-204 Weedsport Spraying Tests (Mar. 1977) [1.9 – 4.2 f/cc in simulated attic tests]. [Attachment 91]

<sup>118</sup> Pinchin Report. [Attachment 26].

**4. Realistically Conducted Air Tests Confirm that ZAI Will  
Release Significant Numbers of Asbestos Fibers on Disturbance**

While air testing cannot replace dust testing to determine if a building is contaminated, it can show how easily asbestos can be released from a product. Used for that purpose, air testing in ZAI homes confirms that virtually any disturbance of it will release significant numbers of asbestos fibers. ZAI is the ultimate “accident waiting to happen”. As discussed previously, realistic simulations of foreseeable ZAI disturbance produce air readings:

1. Over 3,000 times background levels in the home;<sup>119</sup>
2. Well over the current OSHA excursion level;<sup>120</sup> and
3. Thousands of times higher than outside ambient asbestos levels.<sup>121</sup>

These asbestos releases come from a product advertised as “100% vermiculite”.<sup>122</sup> A consumer certainly has the right not to be exposed to millions of asbestos fibers in attic air from a product represented to be “absolutely safe”.<sup>123</sup> The air readings measured by the ZAI Claimants and the Canadian government researchers show that ZAI is indeed one of the most friable products ever tested. It will launch toxic fibers into the air with minimal disturbance. Major disturbance produces intolerable levels by any measure. While the intensity of fiber release increases with the intensity of disturbance, nobody has found a way to disturb ZAI without releasing asbestos. Grace’s testing in the 1970s, the ZAI Claimants’ testing, and

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<sup>119</sup> Ewing Report, at 14. [Attachment 28]

<sup>120</sup> See, e.g., Ewing Report, Attach. 2, at 12 [worker exposure during ZAI movement of 4.6-16 f/cc with a 34-minute TWA of 12.5 f/cc]. [Attachment 28] The OSHA 30-minute excursion limit is 1 f/cc. See OSHA Asbestos Standard, 29 C.F.R. § 1910.1001(c)(2) (1996). [Attachment 94]

<sup>121</sup> Longo & Hatfield Report Report, at 7 [reporting urban ambient air levels at .00001 f/cc]. [Attachment 43]

<sup>122</sup> See ZAI advertisements. [Attachment 5]

<sup>123</sup> Id. For example, an adult moving ZAI for thirty minutes during a renovation project using the method recommended by Grace would inhale about 1,887,000 asbestos fibers. Ewing Report, at 8-9. [Attachment 28]

Canadian government testing all produced major asbestos releases. Even Grace's carefully controlled, minor disturbances produced asbestos release.

The air test results as a whole confirm ZAI's inherent fiber release propensity. These results are consistent with the surface dust contamination evidence. With each disturbance, ZAI will release more asbestos into its vicinity. Far from aiding Grace's position, air testing helps condemn ZAI.

## **II. The Solution For ZAI is a Claims Fund to Address Abatement Costs**

The scientific evidence accumulated concerning ZAI is remarkably consistent in the following conclusions:

1. ZAI is an ultra-friable product;
2. Contrary to Grace's representations to regulatory agencies, ZAI can exceed 1% asbestos by weight;
3. Because of its ultra-friability and lack of binder, ZAI can release as many or more asbestos fibers upon disturbance as products having much more asbestos by weight;
4. Disturbance of ZAI or its settled dust during normal activities, such as home repair and renovation, can release significant amounts of asbestos into the air;
5. American homes are increasingly subject to remodeling and renovation that can impact ZAI;<sup>124</sup>
6. The vast majority of ZAI homes are older than twenty years and can be as old as seventy years. American homes are being demolished at the rate of 300,000 per year, with older homes more likely to be demolished;<sup>125</sup>

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<sup>124</sup> Steve Hays & Ronald Gobbell, "Opinions About the Use and Disturbance of Zonolite Attic Insulation", App. A, at 2 (Mar. 21, 2003) (citing U.S. Census reports). [Attachment 23—"Hays & Gobbell Report"]; Van Cura Deposition, at 14-17 ] [Home improvement industry growing by \$5 billion per year due to aging housing stock and other factors]. [Attachment 85]

<sup>125</sup> Michael Carliner, Replacement Demand for Housing, Housing Econ., at 5-9 (Dec. 1996). [Attachment 22]

7. Due to ZAI's inevitable fiber release, demolition or major renovation impacting ZAI requires professional assistance and extensive, expensive precautions;
8. As a result, professional ZAI removal will be required in a million or more homes over the next several decades.

After ZAI Claimants' year of investigation and effort, it is remarkable to discover that the differences dividing the Claimants and Grace are relatively small. They primarily concern the timing of ZAI removal. Some Claimants' experts, former Grace scientists and government officials favor a pro-active approach to removing ZAI. Claimants' expert, Steve Hays, a certified industrial hygienist involved in the Claimants' testing, stated:

ZAI should be disturbed only under properly designed and controlled asbestos abatement conditions. Surfaces contaminated with tremolite from ZAI should be abated.<sup>126</sup>

Grace's former manager of industrial hygiene, Thomas E. Hamilton, agreed:

Q: And based on your testing if you had zonolite attic insulation in your home what action would you take?

MR. RESTIVO: Object to the form.

A: If I had it in my home, I would have it removed.

Q: And why?

A: Because it would be very easy to do, it would not cost that much money to do it, and there are other substitutes for it that are just as good that do not present the asbestos hazard that this material does.<sup>127</sup>

The EPA official in charge of the Libby cleanup also agreed on the ultimate solution for ZAI:

The only way to eliminate the problem is to have a qualified asbestos-abatement contractor come in and remove the vermiculite and confirm that the area and the living space are

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<sup>126</sup> Hays & Gobbell Report, at 4. [Attachment 23]

<sup>127</sup> Hamilton Deposition, at 126. [Attachment 4]

free of fibers. There are well-established methods for doing that, but it's not going to be cheap. Don't try to remove the material yourself, or you're likely to spread asbestos fibers throughout the living space.<sup>128</sup>

Remarkably, Grace's asbestos-in-buildings expert, Dr. Morton Corn, agrees that only removal will solve the problem, but feels that such removal can be postponed until a major remodel or demolition:

Q: Fair enough, Doctor. Let's look at the next point, if you plan to remodel or conduct renovations that would disturb the vermiculite, hire professionals trained and certified to handle asbestos to safely recover (sic) the material.

Do you agree with that?

A: I agree with that.<sup>129</sup>

Finally, EPA's National Headquarters has advised:

If you plan to remodel or conduct renovations that would disturb the vermiculite, hire professionals trained and certified to handle asbestos to safely remove the material.<sup>130</sup>

If there is a silver lining in the otherwise bleak ZAI picture, it is the following: (1) current evidence indicates that ZAI in an attic which is undisturbed and likely to remain so does not require immediate removal; and (2) ZAI removal is relatively straight-forward and inexpensive. These two factors lend themselves to a ZAI solution of establishing a claims fund to assist homeowners undertaking major renovation or demolition, and in other appropriate circumstances. There appears to be broad agreement that due to ZAI's hazard, professional ZAI removal cannot be avoided in any ZAI home, but at best can be delayed in some. Likewise, the preferred method for ZAI removal seems to be the relatively

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<sup>128</sup> J. of Light Constr., at 14 (May 2003) [citing EPA official, Jim Christiansen]. [Attachment 34]

<sup>129</sup> Corn Deposition, at 113. [Attachment 3]

<sup>130</sup> EPA, "Current Best Practices for Vermiculite Attic Insulation – May 2003". [Attachment 2]



inexpensive use of a vacuum truck equipped with appropriate filters and safeguards. Both Grace's former Manager of Industrial Hygiene, Thomas Hamilton, and Grace's principal building expert, Morton Corn, agree that a vacuum truck could do the removal job in attics efficiently and relatively easily.<sup>131</sup>

In this bankruptcy context, there is a pressing need to deal with ZAI in a way that will not impede the Grace reorganization, but recognizes the developing nature of ZAI claims. A ZAI claims fund can be established to compensate presently identified claimants and make provision for not-yet-identified claimants as homeowners encounter ZAI during foreseeable disturbance activities. While the details of a claims facility should be the subject of negotiation, its broad outlines should include: (1) a notice program targeted at likely owners of homes with ZAI in geographical areas where ZAI was sold; (2) a neutral administrator to process identified ZAI claims and receive additional ZAI claims over the years; and (3) appropriate funding, taking into consideration Grace's assets and liabilities, that makes a meaningful contribution to the enormous total cost of removing ZAI from the nation's homes.

Further investigation is certainly needed on the scope of the ZAI problem. But even using conservative estimates of one million homes and \$3,000-\$5,000 per home to remove ZAI by vacuum truck, the total cost of the effort would be \$3 to \$5 billion. If there are more homes, the number would obviously be higher. If ZAI removal were delayed in many homes, the present value of the number would be lower. Under any scenario, the number will be significantly more than Grace could pay even if it had no personal injury liabilities. Thus the real task is how to treat all claims fairly in the context of limited assets.

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<sup>131</sup> Hamilton Deposition, at 125. [Attachment 4]; Corn Deposition, at 26. [Attachment 3]

## CONCLUSION

After a year of intensive investigation, ZAI Claimants have uncovered evidence that demonstrates convincingly there is no material issue of fact that ZAI can release enormous amounts of asbestos upon disturbance, that such release will contaminate surfaces in homes, and that ZAI will remain an ever-present homeowner concern until its eventual removal. Whether that removal comes: (1) because homeowners want to be able to move around their attics without concern; (2) before a sale or remodel; or (3) prior to demolition, it is removal prompted by the hazardous nature of ZAI. The differences in opinion in this case boil down simply to the timing of the necessary ZAI removal. They do not affect the inevitability of the removal costs, nor the viability of the bankruptcy claims.

Whether the issue is examined in the context of building contamination, unreasonable danger or another legal theory, the outcome is the same. ZAI can contaminate buildings, pose an unreasonable danger when disturbed, and will impose an inevitable burden on homeowners with ZAI. Nothing can make the ZAI problem go away. This bankruptcy must make provision for ZAI claims.

For the foregoing reasons, the ZAI Claimants request an Order granting summary judgment on the issues of: (1) whether ZAI can contaminate homes/pose an unreasonable danger upon disturbance; and (2) whether ZAI Claimants have viable bankruptcy claims under tort and/or other legal theories.

Dated: July 7, 2003

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**CERTIFICATE OF SERVICE**

I, Charles J. Brown, III, hereby certify that I caused a copy of the foregoing to be served upon the attached service list via hand-delivery or federal express.

I certify the foregoing to be true and correct under the penalty of perjury.

Dated: July 7, 2003

/s/ Charles J. Brown, III  
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